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Date: May 13, 2010

Project: San Jacinto River Waste Pits Superfund Site
Project #090557-01

Subject: Draft Meeting Minutes - Kickoff Meeting for Task 1 of the AOC
Wednesday, May 12, 2010, EPA Offices, Dallas, Texas

Participants:		
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* Participated via phone		

DISCUSSION SUMMARY

Representatives from the EPA, EPA's technical consultant, MIMC, and International Paper met at the EPA offices in Dallas Texas to discuss Task 1 of the Administrative Order of Consent (AOC) for the San Jacinto River Waste Pits Superfund Site Time Critical Removal Action. The goals of this meeting were to define the content of the Alternatives Evaluation Technical Memorandum, clarify Task 1 and Work Plan Requirements, share technical information supporting the alternative analyses, and schedule a follow up meeting before submitting the Technical Memorandum to the EPA.

TCRA Goals, Objectives, and Schedule Discussion

- The effective date is May 17, 2010.
- The Technical Memorandum is due on June 1, 2010, due to the holiday on May 31, 2010.
- The EPA will provide a technical review via their consultant, Mike Hasen, which will include comments and recommendations.
- The EPA is not looking for a permanent structure; they are looking for a design life of 5 to 7 years.
- The boundary for the TCRA is the 1966 Waste Pit footprint.

AOC Technical Memo Requirements and Task 1 Process (See Attachment C, Draft Meeting Points)

- The Responsible Parties will prepare a Technical Memorandum that evaluates each alternative against:
    1. Effectiveness
    2. Implementability
    3. Cost

    A Pros & Cons analysis is preferred, with a discussion of compatibility with future NTCRA options.
- Reviewed evaluation criteria and draft text on evaluation criteria. Anchor QEA will prepare a summary of the discussion in a separate Technical Memorandum. The Design and Evaluation Points discussed included:
    1. The Design Storm Event - The RPs felt it was overly conservative to use a 100-year event for the TCRA, which will only be in place for 2 to 7 years before the NTCRA is implemented. Anchor QEA will prepare a Technical Memorandum presenting recommendations for the TCRA Design Storm Event.
    2. Implementation - focus on completing the design within 180 days. The goal is to complete construction within 1 year of an approved TCRA remedy.
    3. Cost Accuracy
        - The RPs felt that 30% accuracy was appropriate for this level of design. Hasen felt this accuracy was appropriate with the following conditions:
            - Provide detailed back up of all cost estimates
            - Highlight those cost items that contain more uncertainty
- The RPs presented a list of technologies that they considered. The EPA was in agreement, but suggested that geotubes, gabion walls, and rock revetments should also be considered.
- Discussed the definition of compatibility with NTCRA:

1. Currently do not know what the NTCRA will be because it has to go through the Feasibility Study process. However, the EPA and the RPs felt that the NTCRA would consist of one of three technologies:
    - Direct removal and offsite disposal
    - Containment (including engineered caps or CDFs)
    - Insitu remediation – suggested review of available treatments (biological, incinerate, green options, per Region 6 Guidelines)
2. Each of the TCRA alternatives will be evaluated against these three potential NTCRA alternatives in the form of Pros and Cons analysis.

Open Discussion of TCRA Alternatives for Consideration (ALL)

- The EPA presented their matrix of alternatives (See Attachment D)
- The RPs went over the results of the hydrodynamic modeling:
    - Water level elevations under different storm events (Attachment E)
    - Storm/Flood Event Velocities under different storm events (Attachment F)
- The RPs went over the alternatives currently being evaluated (Attachment G). The EPAs comments and discussions:
    - Suggested evaluating backfilling against the sheet pile walls in the deeper areas to reduce cantilever heights.
    - Discussed the potential water quality within the sheet piled area. Stated that it was not a concern as long as there was not turbidity as the dioxin is associated with solids and not dissolved.
    - Discussed the costs necessary to place granular materials that would be resistant to 25 and 100 year storm events. Do not need to include in alternatives, but need to present the cost.
    - Discussed rationale on why vegetation in western cell is sufficient for the TCRA. The EPA suggests covering the leading edge of the west cell in the RP's alternative 1, vinyl sheet pile around the 1966 footprint.
    - Discussed the implementability of installing sheet pile from water. Noted that it would be very difficult to install sheet piling from the water with mud line elevations around -4 feet DATUM. Barges will likely need more water depth. Even more water depth will be needed for installing steel sheet piles because of the need for heavier equipment to handle and install the sheets. Also noted increased turbidity due to the push vessel and driving assemblies.
    - The EPA requested that the RPs make sure they lay out their thought process for each alternative.

ACTION ITEMS

- Anchor QEA to provide design guidance rationale, as requested, to support the Technical Memorandum. An example is the recommended design storm.
- Anchor QEA to provide web links to or copies of key technical documents that will be used for design and evaluation. These would include EPAs and the Corps Capping Guidance Document and the Contaminated Sediment Guidance Document.
- The EPA to provide additional alternatives/modifications to existing alternatives by close of business on May 14, 2010.
- The EPA and Anchor QEA scheduled a follow-up meeting, tentatively for Friday, May 21, 2010, in either Dallas or Houston (Changed via email to May 20, 2010 in Houston).

Attachment A – Meeting Agenda
Attachment B – Sign in Sheet
Attachment C – Draft Meeting Points
Attachment D - EPA alternatives matrix
Attachment E – Water Levels
Attachment F – Hydrodynamic Model Figures for varying Storm Events (9 pages)
Attachment G – RP alternative figures 1 to 15

Attachment B

San Jacinto Waste Pits
Wed 5/12/2010 mtg – Kick off

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EVALUATION STRATEGY
SAN JACINTO TCRA
Draft 5/12/2010 Meeting Points

According to the Action Memorandum prepared by EPA, the TCRA involves the following:

1. Public access restrictions must be put in place
2. Immediate design and construction of a physical protective barrier surrounding Waste Ponds 1 and 2 that addresses the release, or threat of release of dioxins and furans into the San Jacinto River
    a. Any concentrations greater than 330 ng/kg of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) organic carbon normalized (or 4.5 ng/kg TCCD non-organic carbon normalized) in the sediment will be considered part of the source area of contamination within the original 1966 berm placement and must be addressed with the protective barrier
3. Design and construction of the barrier must be structurally sufficient to withstand forces sustained by the river, including any future erosion and be structurally sound for a number of years until a final remedy is designed and implemented. This includes accounting for seasonal severe weather events and will consider the draft letter from Harris County dated 5/11/2010.

The following technologies were considered feasible, considering the time restraints for a TCRA (180 days for design) at the San Jacinto site:

- Isolating the site from land access using fencing (implemented and in place)
- Removing the waste and sediments by dredging
- Confining removed waste and sediments in the upland portion of the waste pit
- Covering the waste and sediments with granular materials
- Covering the waste and sediments with man-made materials (Gabion Walls, rock revetment, geotubes, ACBM)
- Isolating the waste and sediments on site from the river using sheet piling

These technologies were screened from the wide range of technologies available by considering their successful implementation under similar conditions at other NPL sites. The five alternatives developed are based on combinations of these technologies.

Following CERCLA guidance, the five alternatives will be evaluated against the following three criteria:

- Effectiveness
- Implementability
- Cost

How each of the criteria is applied is described below.

<u>Effectiveness Evaluation</u>

Based on the April 2nd Action Memorandum, the following remedial actions objectives for the TCRA was assumed:

1. Control erosion of waste materials
   - Source materials are considered sediments located within the original 1966 berm footprint and with concentrations greater than or equal to 330 ng/kg TCDDD organic carbon normalized. (IV.A.1; Page 9; 2nd paragraph)
   - Erosion can occur from upland runoff, river and tidal currents, waves, and propeller wash. (III.A.4)
   - Technologies used to control erosion "must be structurally sufficient to withstand forces sustained by the river including any future erosion and be structurally sound for a number of years until a final remedy is designed and implemented." (IV.A.1; Page 9; 3rd paragraph)
2. Prevent direct human contact with the waste materials. (IV.A.1; Page 9; 1st paragraph)
   - Humans come into contact with the material accessing the site by land and water.
3. Prevent benthic contact with the waste materials. (III.B)
4. Ensure the "actions are consistent with any long term remediation strategies that may be developed for the site." (V.A.2)
   - Whatever action is applied for the TCRA should not constrain the NTCRA remedy

Based on these objectives, the effectiveness evaluation will focus on the following:

1. The potential effectiveness of the remedy to isolate waste or sediments with concentrations of 2,3,7,8 TCDD above the action levels described above from exposure or transport off site to addresses the release, or threat of release of dioxins and furans into the San Jacinto River from the Site
2. The potential ability of the remedy to withstand and remain in place and effective during and after extreme weather events
3. The potential effectiveness of the technology to prevent benthic contact with the waste material
4. The potential effectiveness of the technologies to prevent direct human contact with the waste materials
5. The potential impacts to human health and the environment during construction.
6. The potential effectiveness and consistency of the technologies with any long-term remediation strategies for the Site.

<u>Implementability Evaluation</u>

This criterion will focus on:

1. Availability of the materials and equipment to implement the technologies
2. Availability of skilled labor to implement the technologies

3. Likelihood that the removal alternative can be implemented in the time frame of the TCRA (target 180 days for design)
4. Likelihood that implementation and construction of the remedial alternative could or will produce adverse effects to the environment

Cost Evaluation

From the RI/FS guidance, costs for the different alternatives will be developed to an accuracy of +50 percent to -30 percent for comparative purposes. The focus will be to make comparative estimates for alternatives with relative accuracy. The costs should include capital and operations, maintenance, and monitoring (OM&M) costs. OM&M costs will be assumed for a period of 2 to 3 years before the NTCRA is implemented.

DIRECTOR'S BRIEFING DOCUMENT
TIME CRITICAL REMOVAL ACTION (TCRA)
SAN JACINTO WASTE PITS SUPERFUND SITE

CURRENT STATUS

- Review PRPs TCRA proposal
- Review TRCA options for source control / source stabilization
- Finalize DRAFT TCRA action memo

CURRENT ACTIONS

- Finalize Time Critical Removal Action Memo (03/17/10)
- Finalize DRAFT Statement of Work (SOW) Time Critical Removal Action

FUTURE ACTIONS

- Meet with stakeholders to discuss TCRA (03/26/10)
- Begin TCRA construction (04/19/10)

TCRA OPTIONS for Source Control / Source Stabilization

OPTION	DESCRIPTION	ADVANTAGE	DISADVANTAGE	RELATIVE COST
PRPs	NW Crn – ACM / Geo. Textile Fabric E Crn - sand	Inexpensive, Easy to construct	Structural instable, not compatible with NON-TCRA	Low
Steel Sheet Piling (SP)	Thin interlocking driven piles	Non-permeable, Structurally stable, Compatible w/ future NON-TCRA uses	Moderately expensive, Design needed prior to construction	Moderate
Vinyl / Composite SP	SP of synthetic material	Less expensive than steel SP, strong, easy to construct, corrosion free, Compatible w/ future NON-TCRA uses	Design needed prior to construction	Low - moderate
Gabion Walls	Formed plastic structure filled with rocks, connected w/ galvanized brackets	Flexible and very strong, support for erosion,	Walls water permeable, use as structural support system to contaminant wall	Moderate
Rock Revetment	Strategically placed rocks that protect shore line from erosion	Easy to construct, Minimal design,	For use as support system only to contaminant wall	Low-moderate
Geo-Tubes	Textile bags filled with sand and buried	Moderate difficulty construction, erosion control	Design needed, May be structurally insufficient for future Remedial uses	Low-moderate

San Jacinto Waste Pits, Site Water Levels

Tidal elevations in feet relative to NAVD88 (based on Battleship Texas State Park gage)
Mean Higher High Water = 1.5
Mean High Water = 1.4
Mean Tide Level = 0.83
Mean Low Water = 0.22
Mean Lower Low Water =0.05

Storm elevations from the modeling:

Event	Maximum Water Surface Elevation (ft, NAVD88)
5-year	6.3
10-year	8.1
25-year	10.3
Hurricane Ike	11.0

The flow in the San Jacinto River during Ike (based on the Lake Houston Gage) was around a 5-year flow but the elevation was higher at the site due to the Storm Surge.

A 5-year event would over the +4 ft sheet pile and berms.

From a previous memo, the recurrence interval information is as follows:

"Table 2 presents the probability of exceedance results. As an example from Table 2, a 5-year flow event would have a 36 percent chance of occurring during a 2 year wait period and a 67 percent chance during a 5 year wait period.

Table 2
Percent Chance of Exceeding Return Period

Return Period (Years)	Annual Percent Chance of Occurrence (%)	Period of Concern (Years)	
		2	5
2	50	75	97
5	20	36	67
10	10	19	41
25	4	8	18

As discussed previously, USEPA guidance recommends designing permanent covers for a 100 year flow event. Over a 100-year design life, the percent chance of exceeding a 100 year flow event is approximately 63 percent. For a temporary two to five year cover over the SCA, a flow event with an equivalent chance of exceedance of approximately 63 percent would correspond to a 5 year flow event."

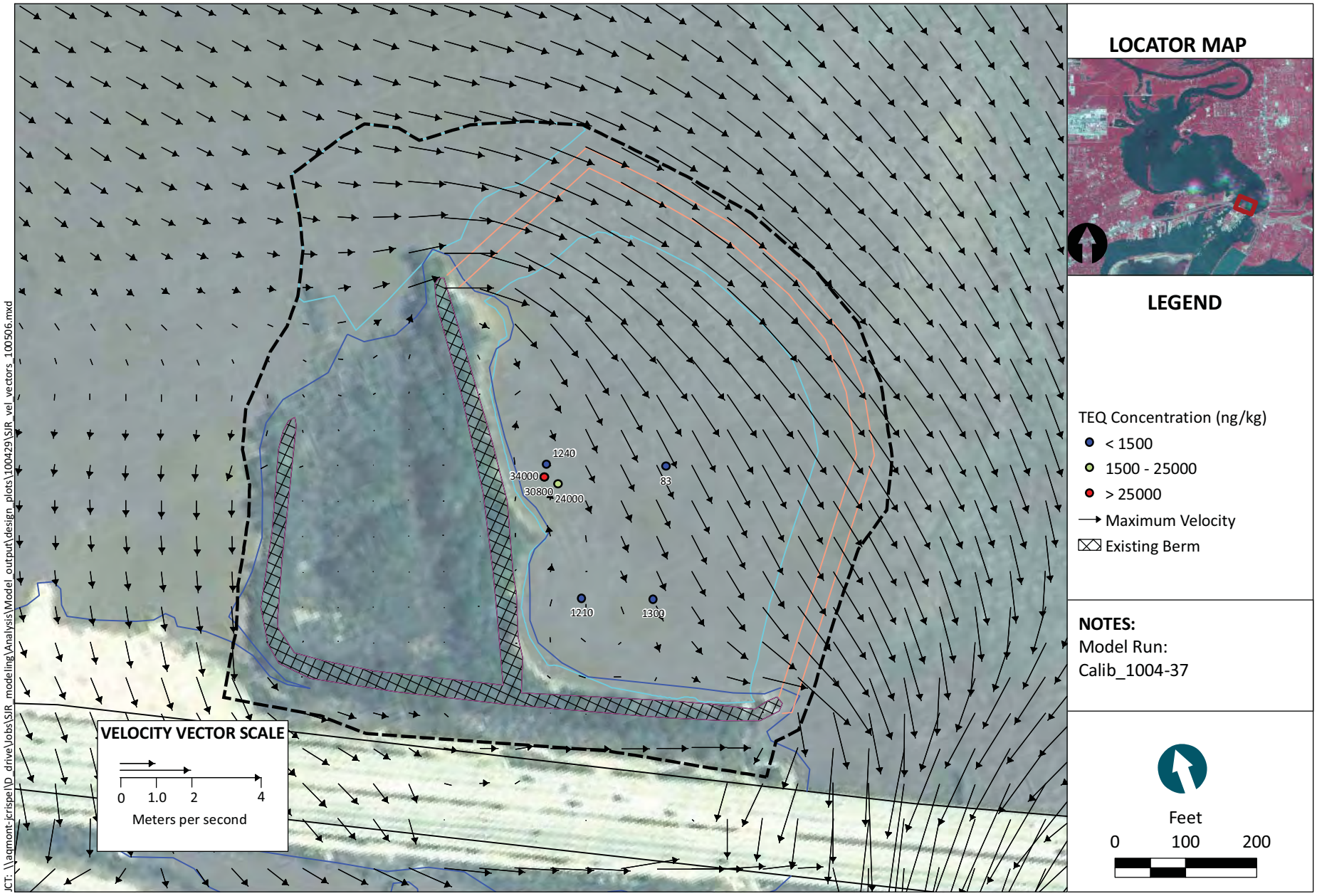

Figure --
Maximum Velocity- Existing Conditions
5-year Flow (82,100 cfs), Lower-Bound Stage Height
San Jacinto River Study Area

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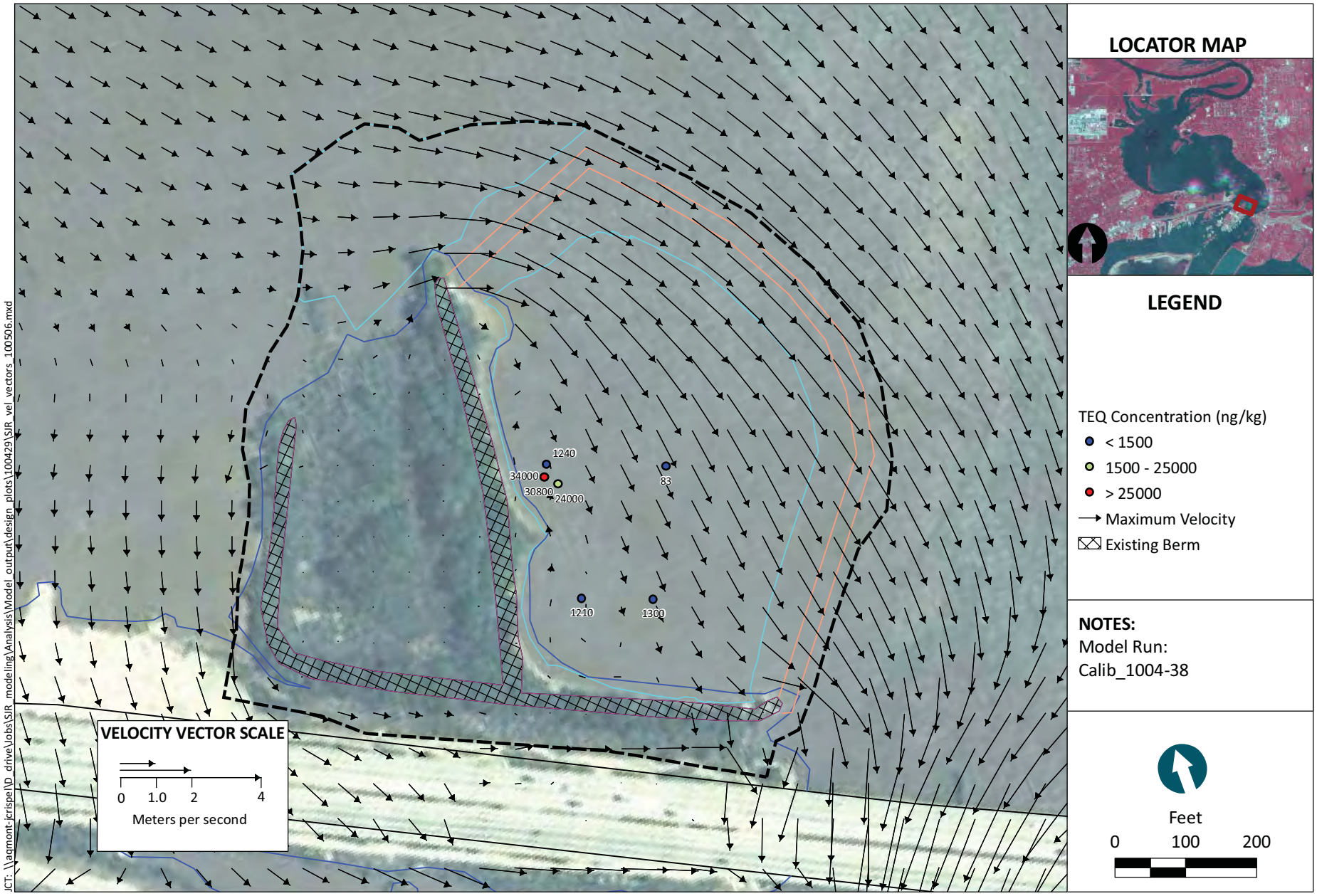

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Maximum Velocity- Existing Conditions
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San Jacinto River Study Area

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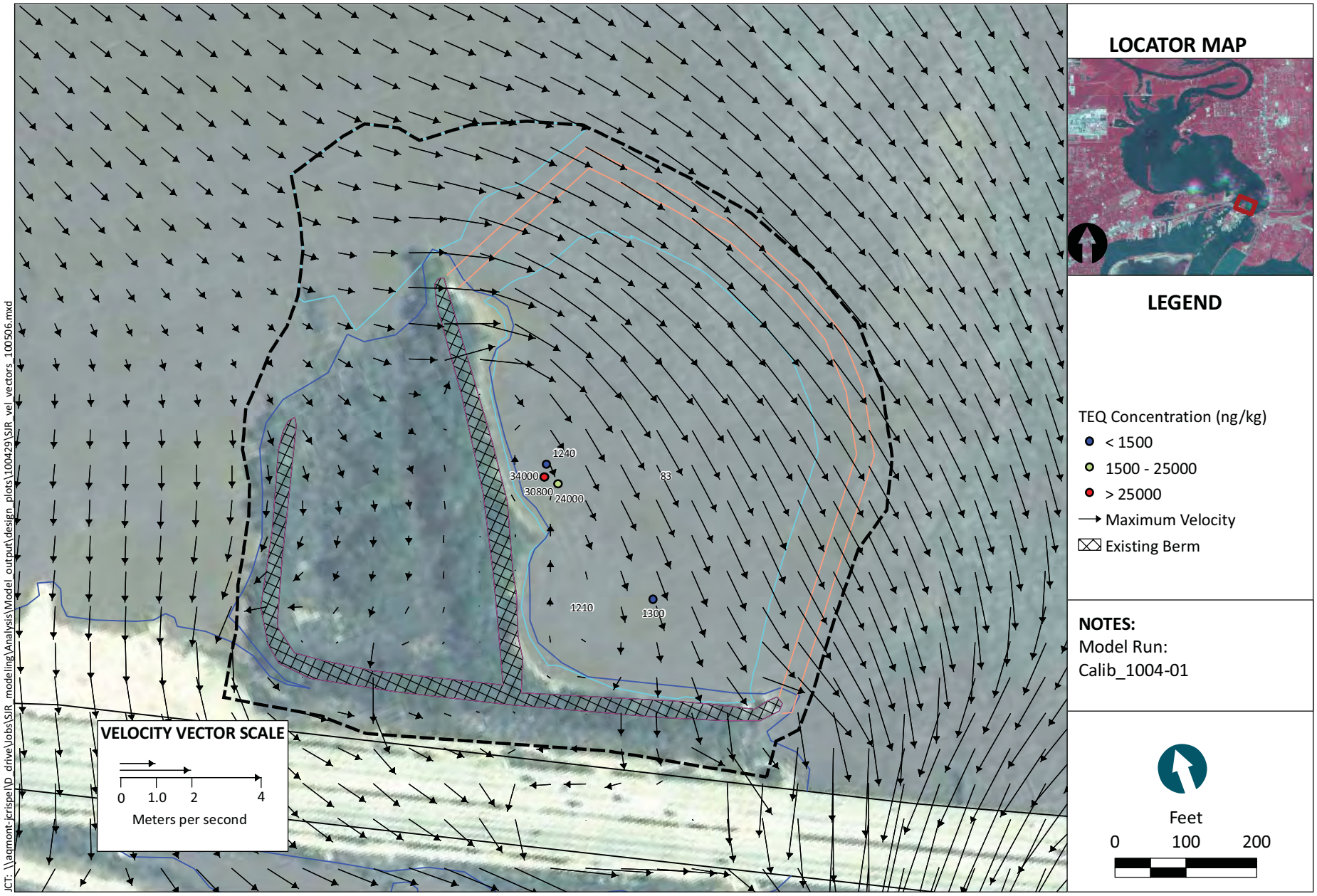

Figure --
Maximum Velocity- Existing Conditions
10-year Flow (126,000 cfs), Lower-Bound Stage Height
San Jacinto River Study Area

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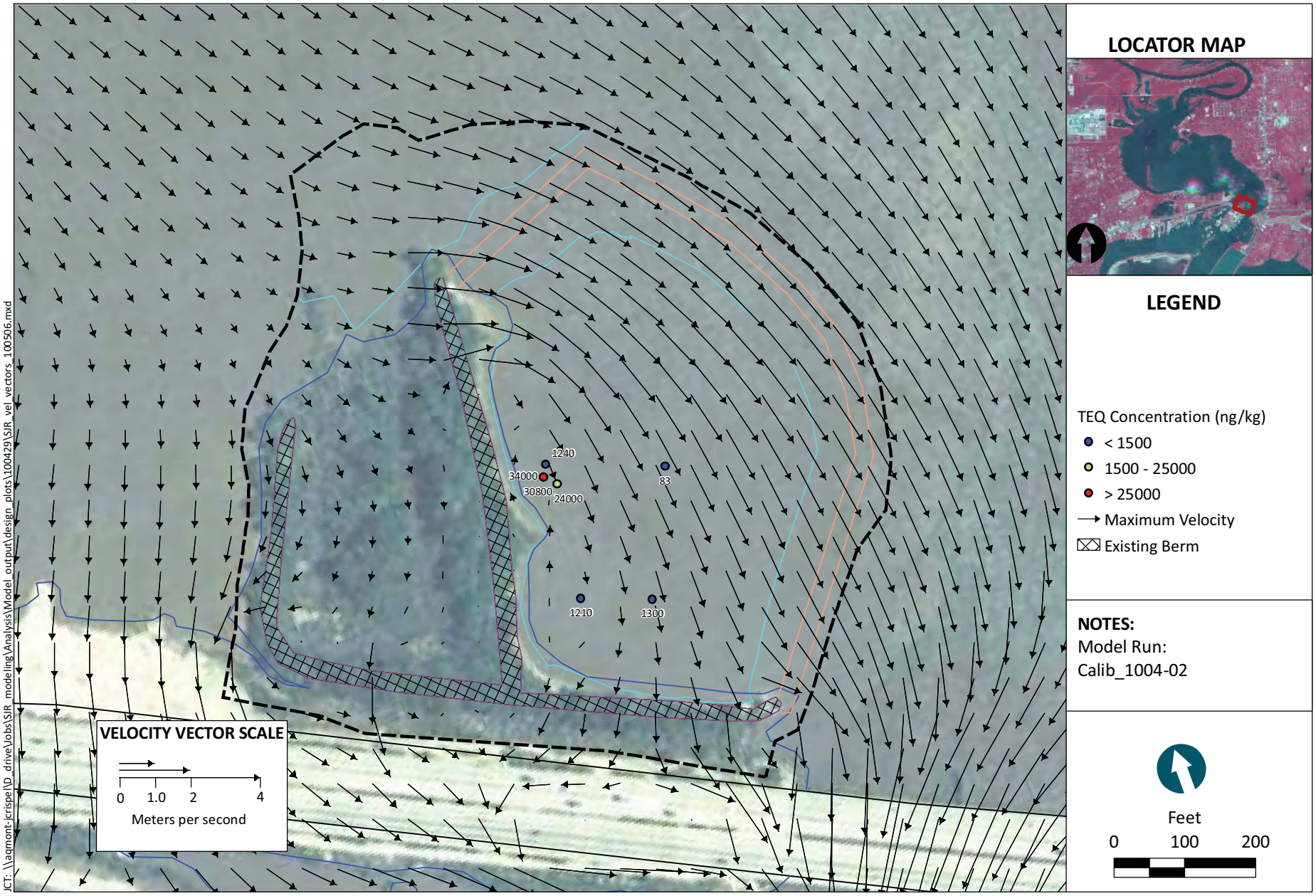

Figure --
Maximum Velocity- Existing Conditions
10-year Flow (126,000 cfs), Upper-Bound Stage Height
San Jacinto River Study Area

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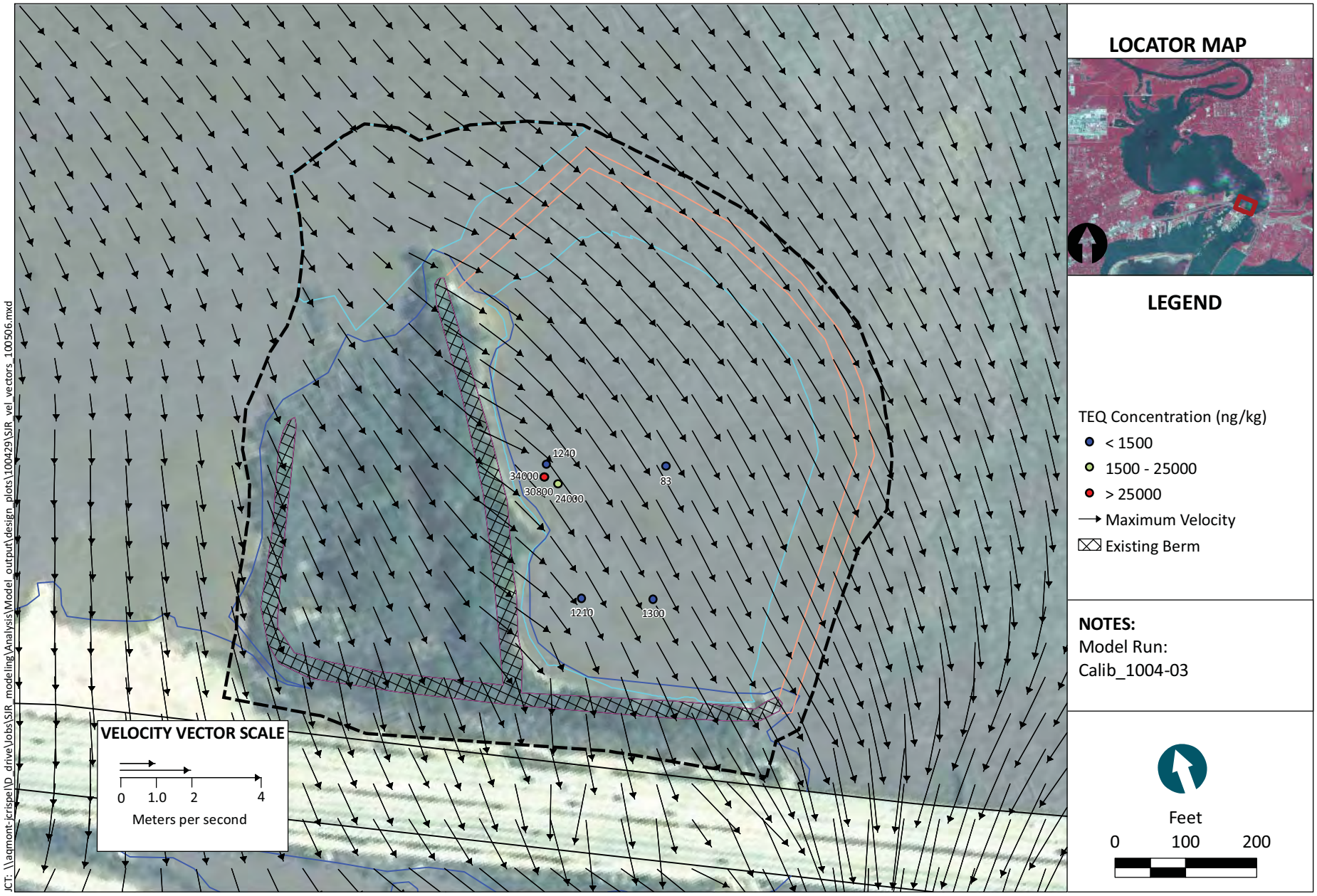

Figure --
Maximum Velocity- Existing Conditions
25-year Flow (202,000 cfs), Lower-Bound Stage Height
San Jacinto River Study Area

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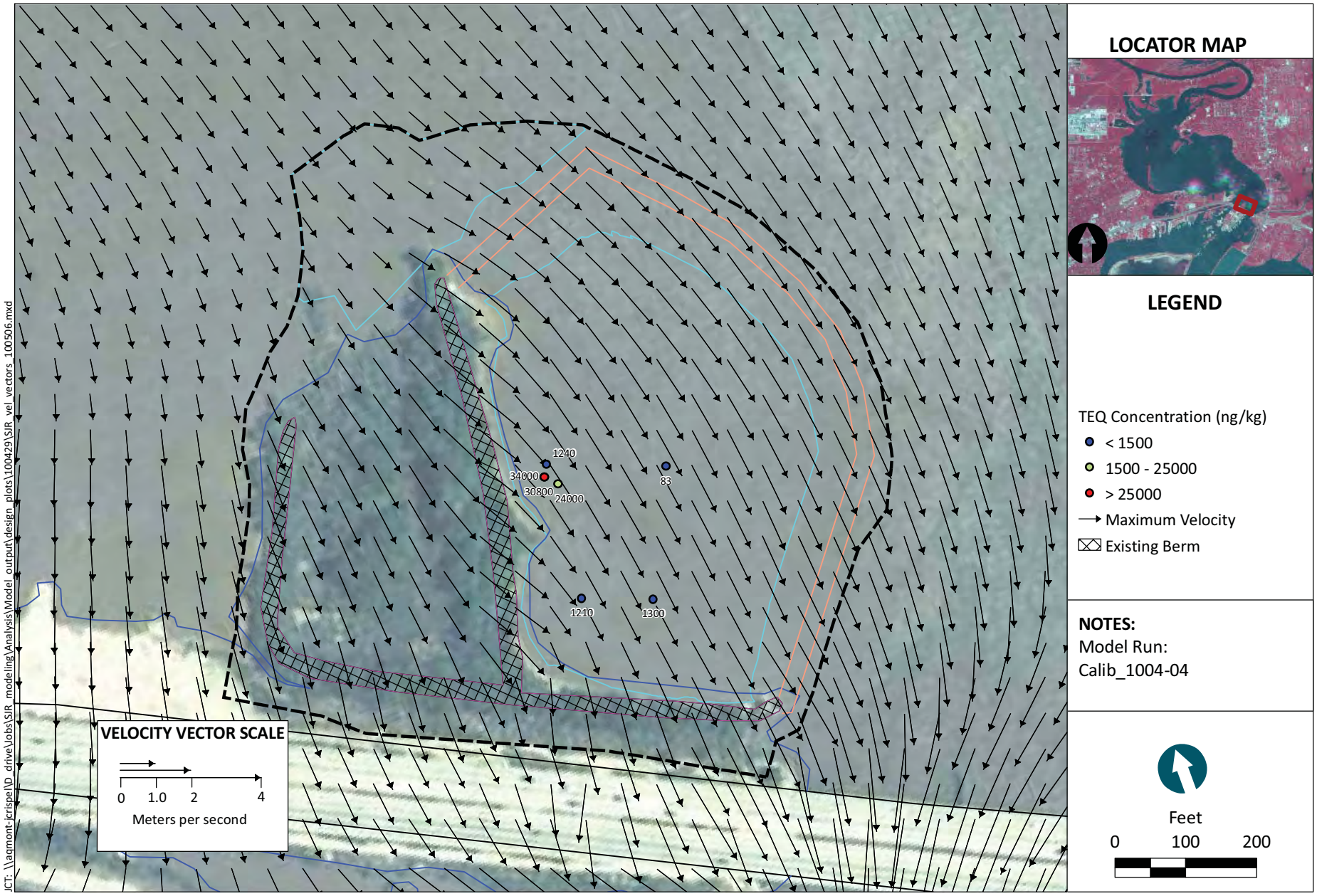

Figure --
Maximum Velocity- Existing Conditions
25-year Flow (202,000 cfs), Upper-Bound Stage Height
San Jacinto River Study Area

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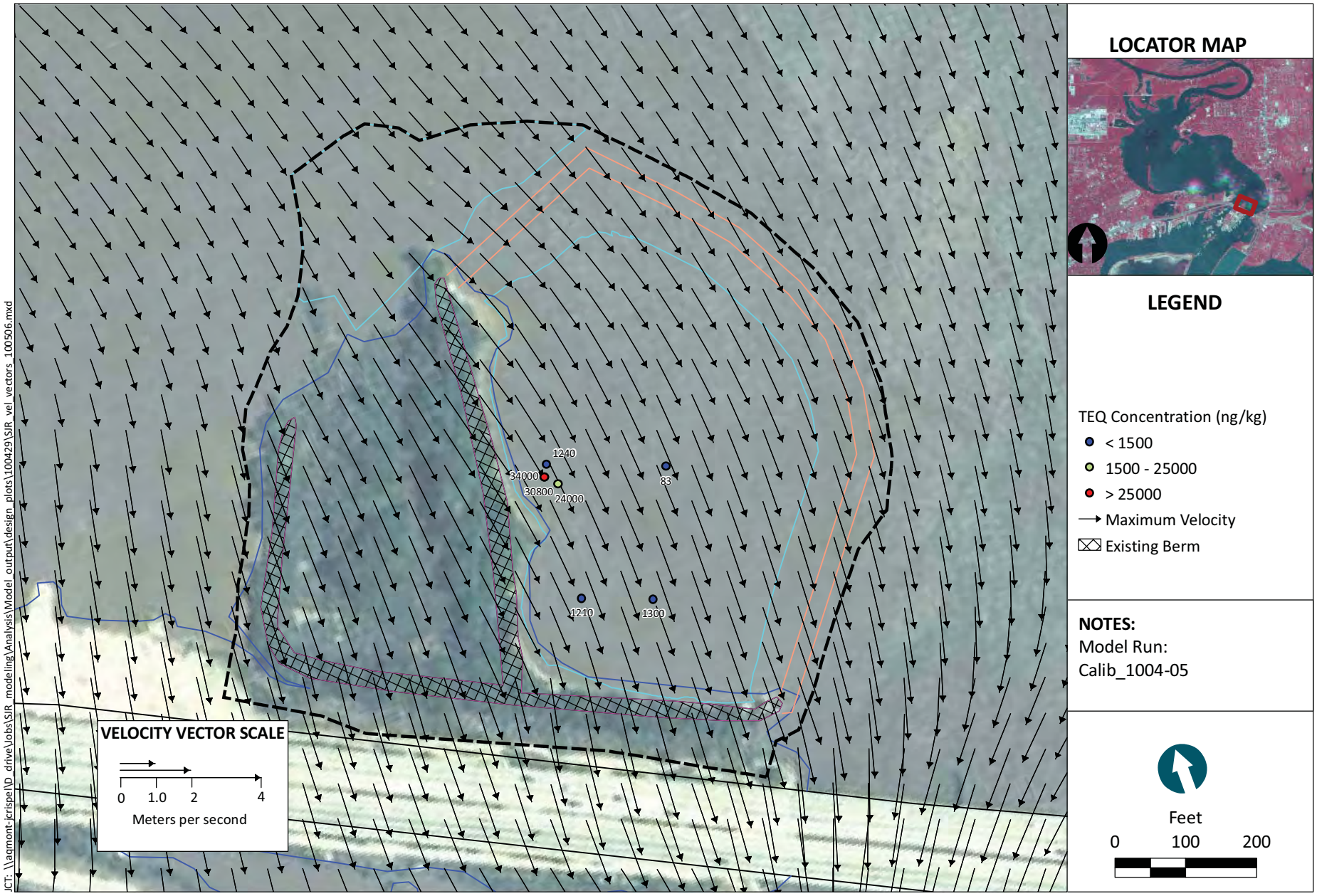

Figure --
Maximum Velocity- Existing Conditions
100-year Flow (372,000 cfs), Lower-Bound Stage Height
San Jacinto River Study Area

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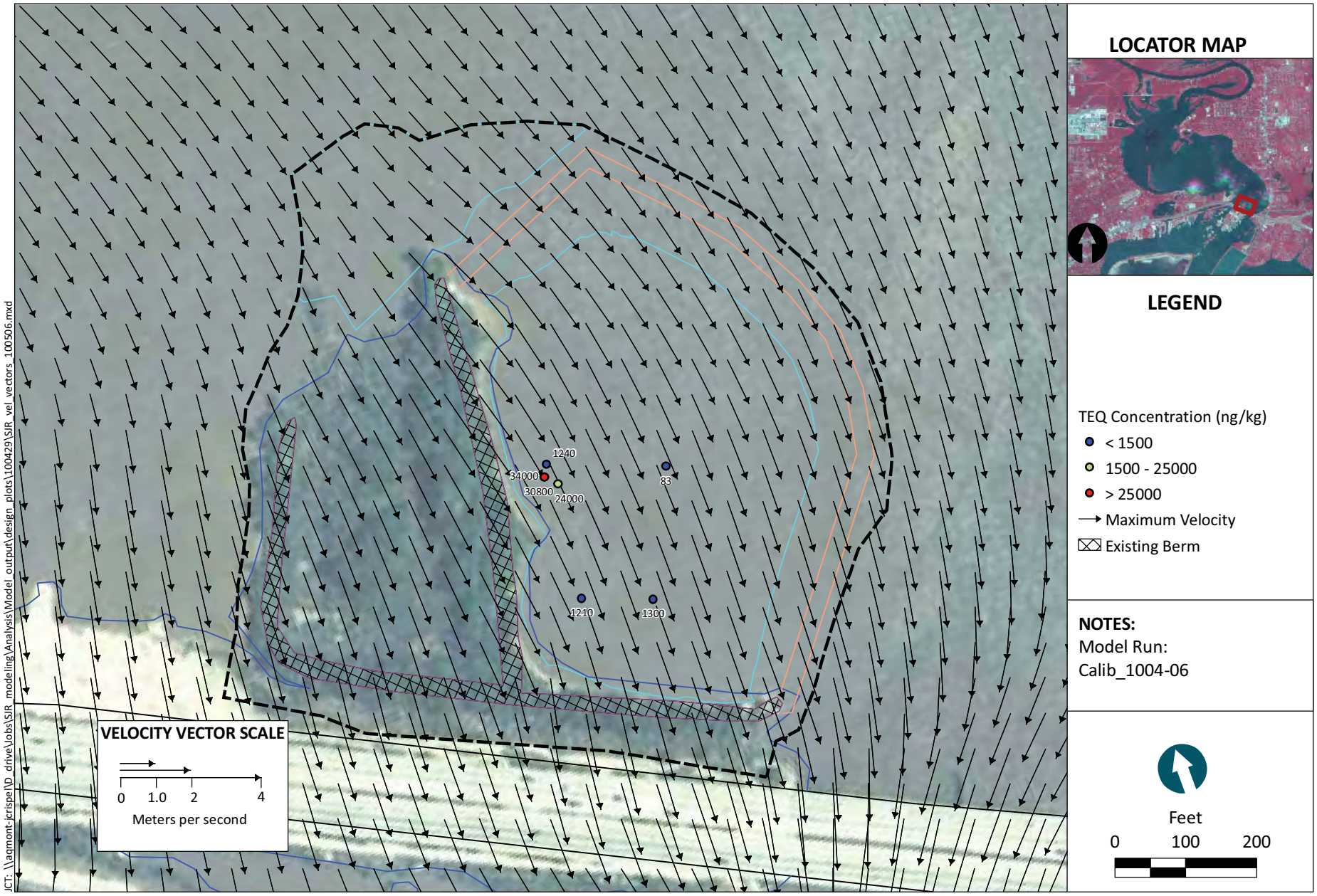

Figure --
Maximum Velocity- Existing Conditions
100-year Flow (372,000 cfs), Upper-Bound Stage Height
San Jacinto River Study Area

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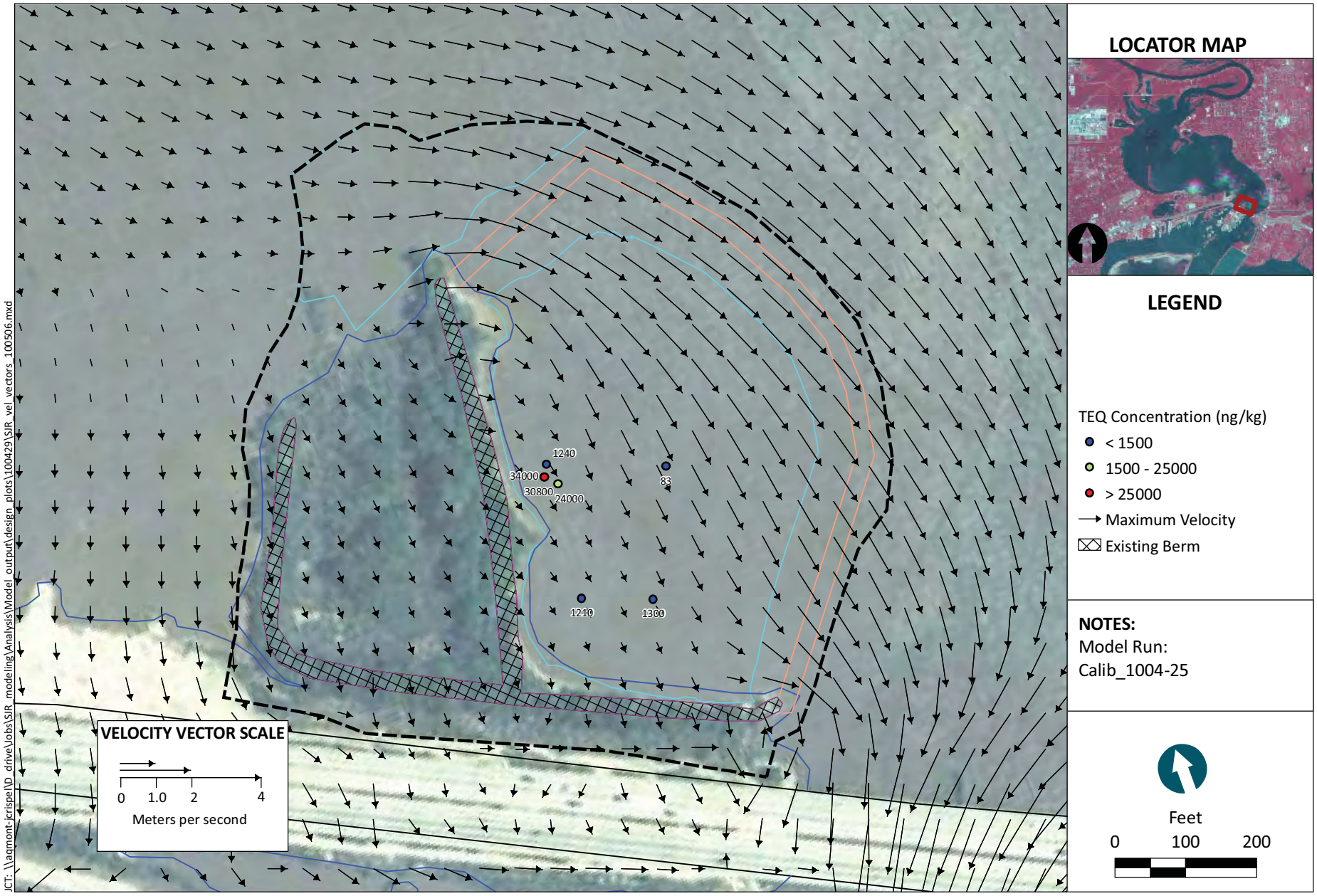

Figure --
Maximum Velocity- Existing Conditions
Hurricane Ike Flow and Stage (September 8 - 20, 2008)
San Jacinto River Study Area

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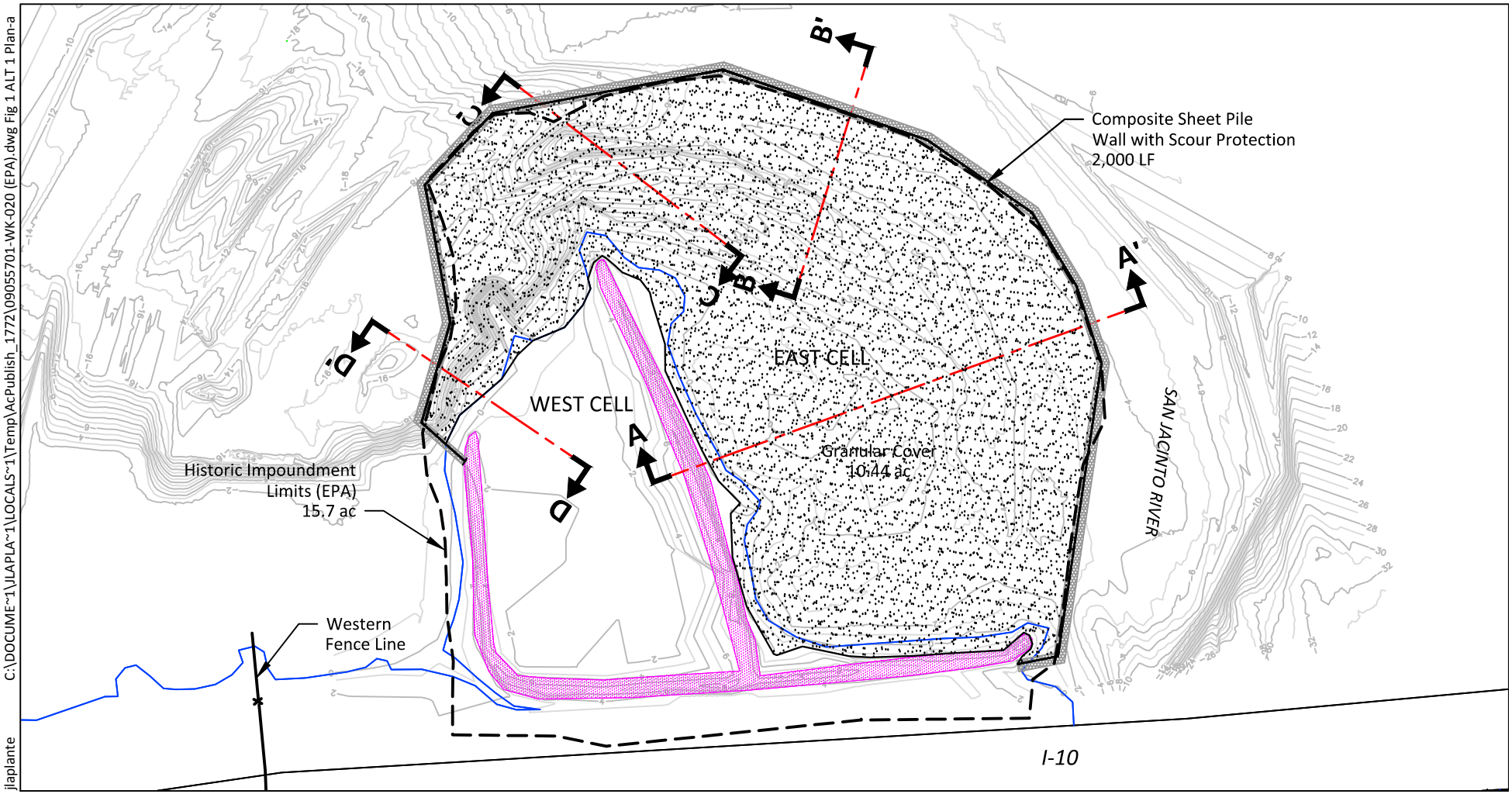

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 1 ALT 1 Plan-a

May 10, 2010 4:34pm jlaplante

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figures 2 and 3 for Cross Sections.

A A — Cross Section Locations and Designation

Composite Sheet Pile Wall

0 200
Scale in Feet

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Figure 1
Alternative 1 Plan View
East and West Impoundment Sheet Pile
SJRWP TCRA

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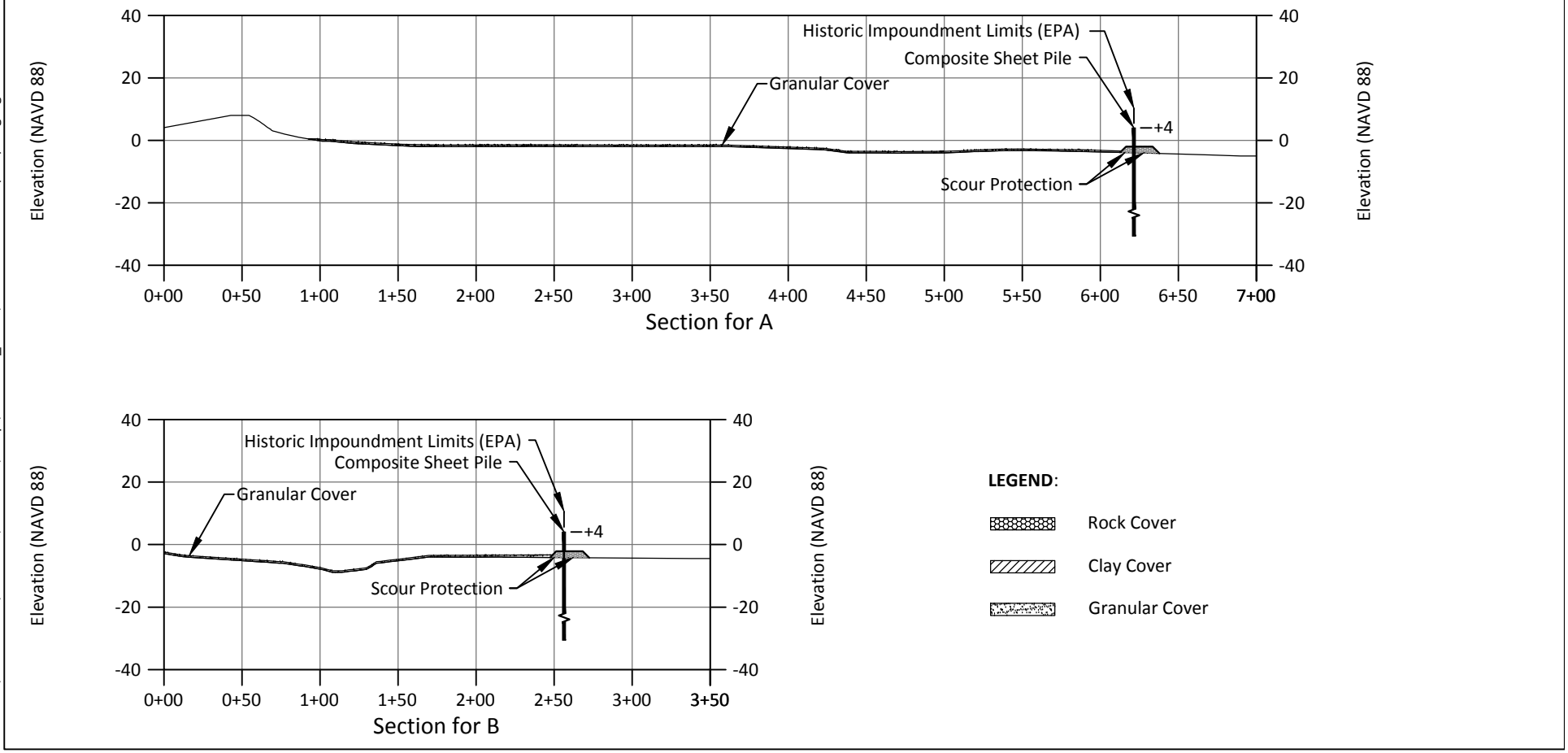

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SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 1 for Cross Section Locations.

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Scale in Feet
Vertical Exaggeration x2

Figure 2
Cross Sections A and B - Alternative 1
SJRWP TCRA

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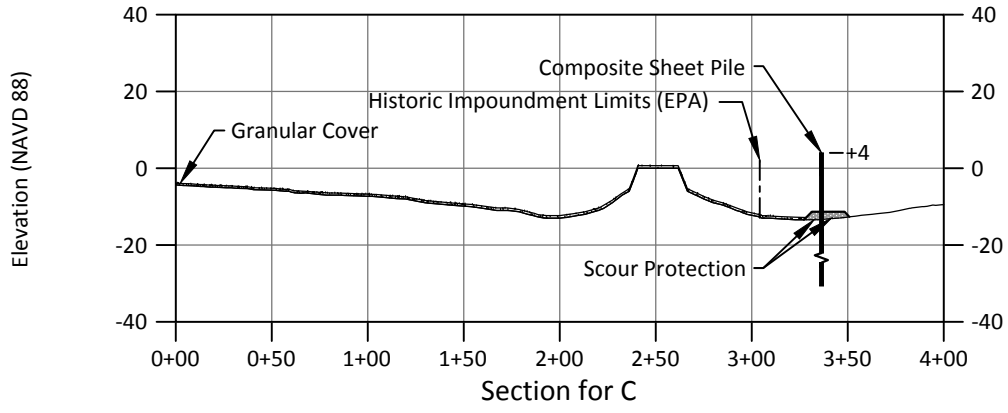

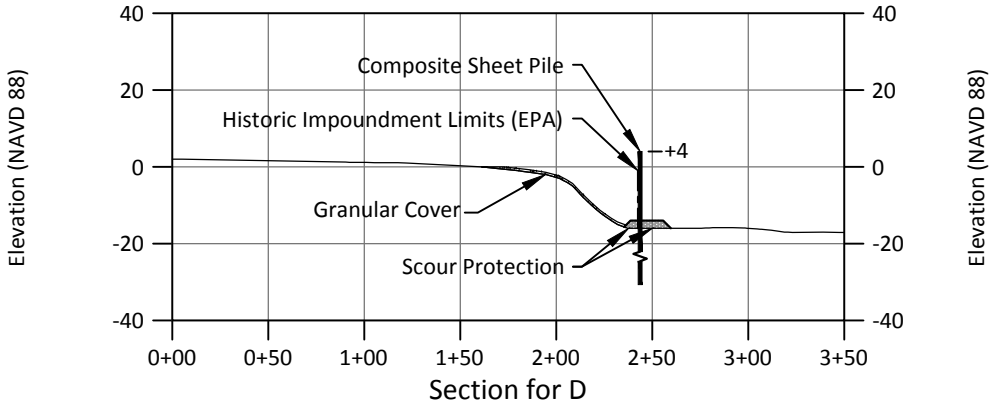

LEGEND:

- Rock Cover
- Clay Cover
- Granular Cover

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 1 for Cross Section Locations.

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Scale in Feet
Vertical Exaggeration x2

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Figure 3
Cross Sections C and D - Alternative 1
SJRWP TCRA

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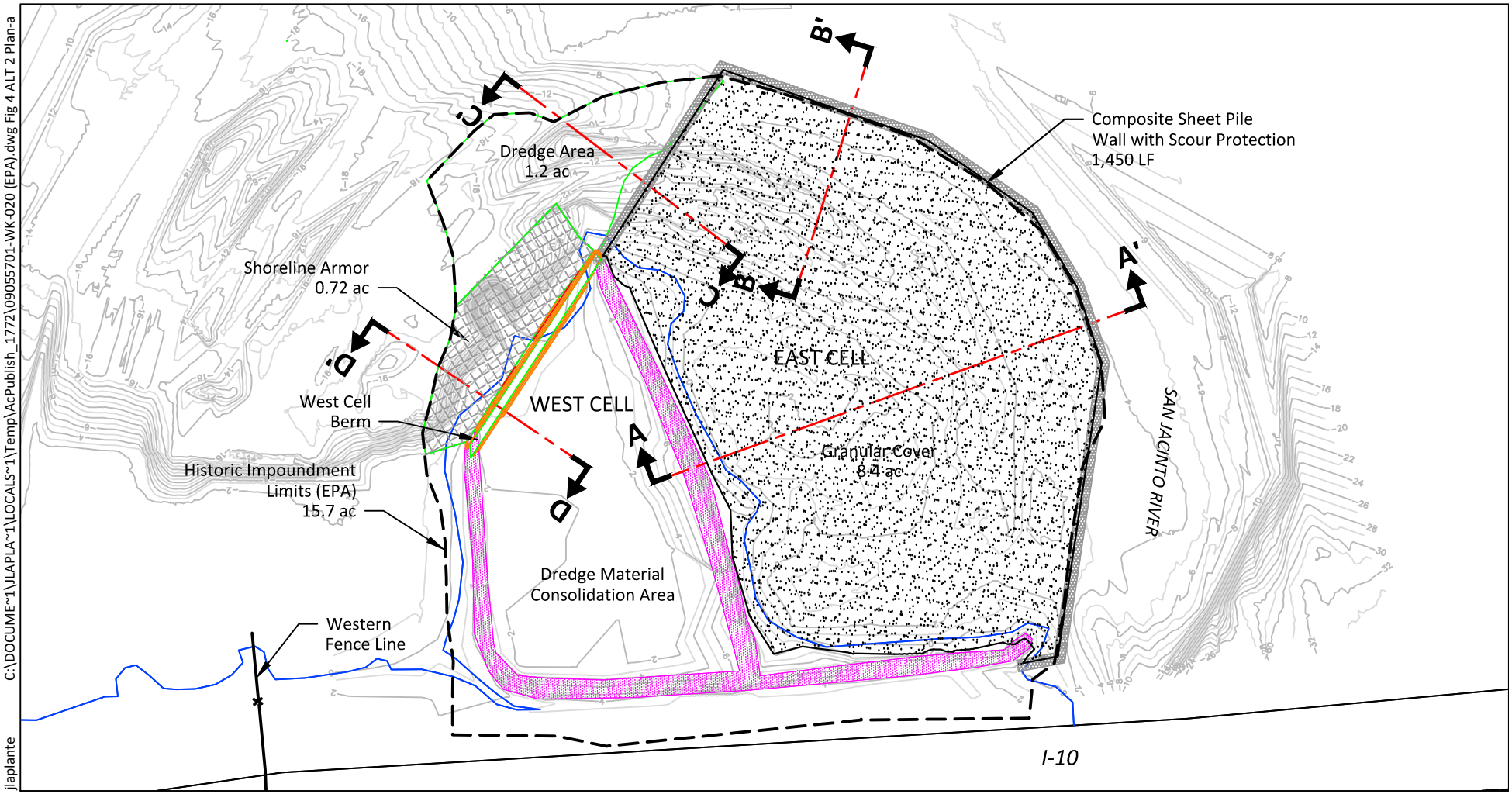

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VERTICAL DATUM: NAVD 88.
NOTE: See Figures 5 and 6 for Cross Sections.

A A — Cross Section Locations and Designation

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Scale in Feet

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May 10, 2010 4:34pm jlaplante

Figure 4
Alternative 2 Plan View
East Impoundment Sheet Pile, Dredge and Cover
SJRWP TCRA

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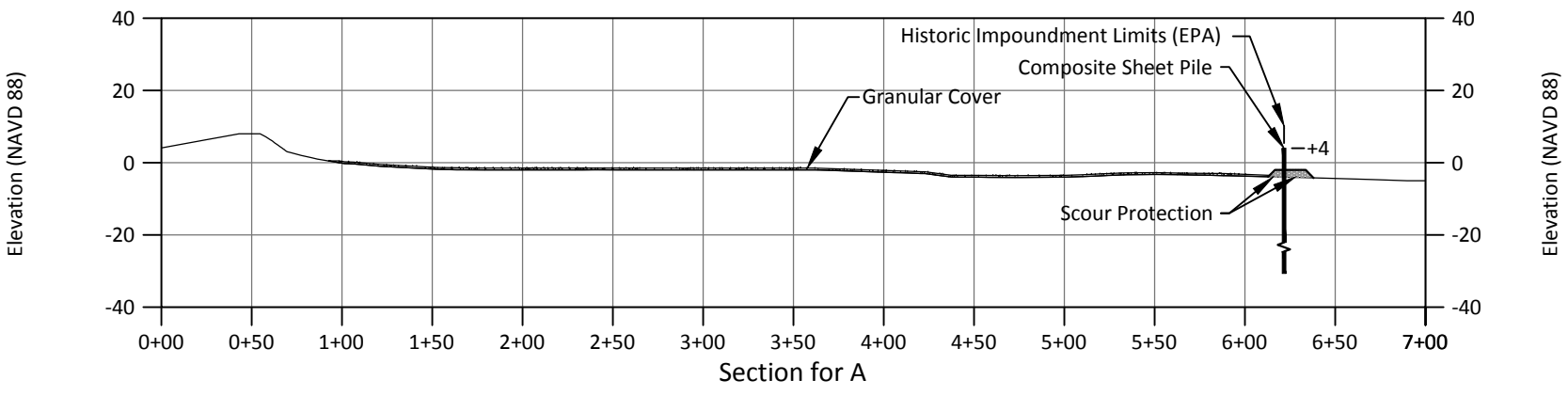

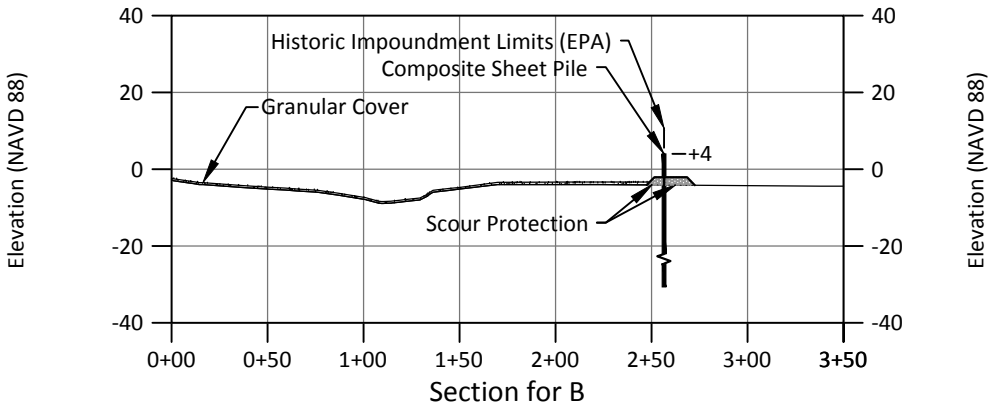

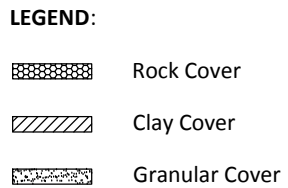

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 4 for Cross Section Locations.

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Figure 5
Cross Sections A and B - Alternative 2
SJRWP TCRA

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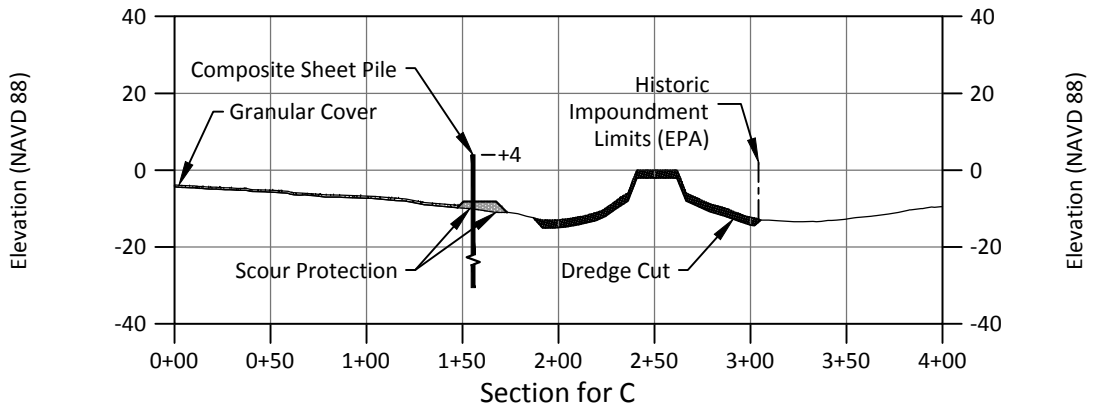
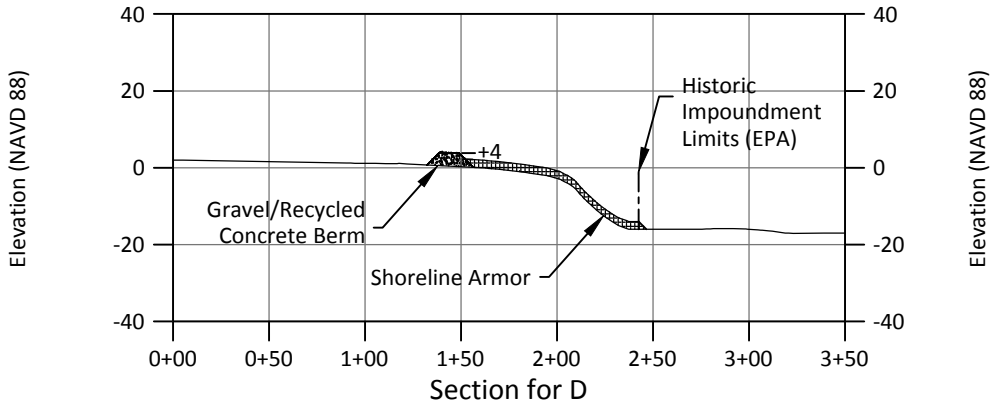




LEGEND:

- Rock Cover
- Clay Cover
- Granular Cover
- Shoreline Armor

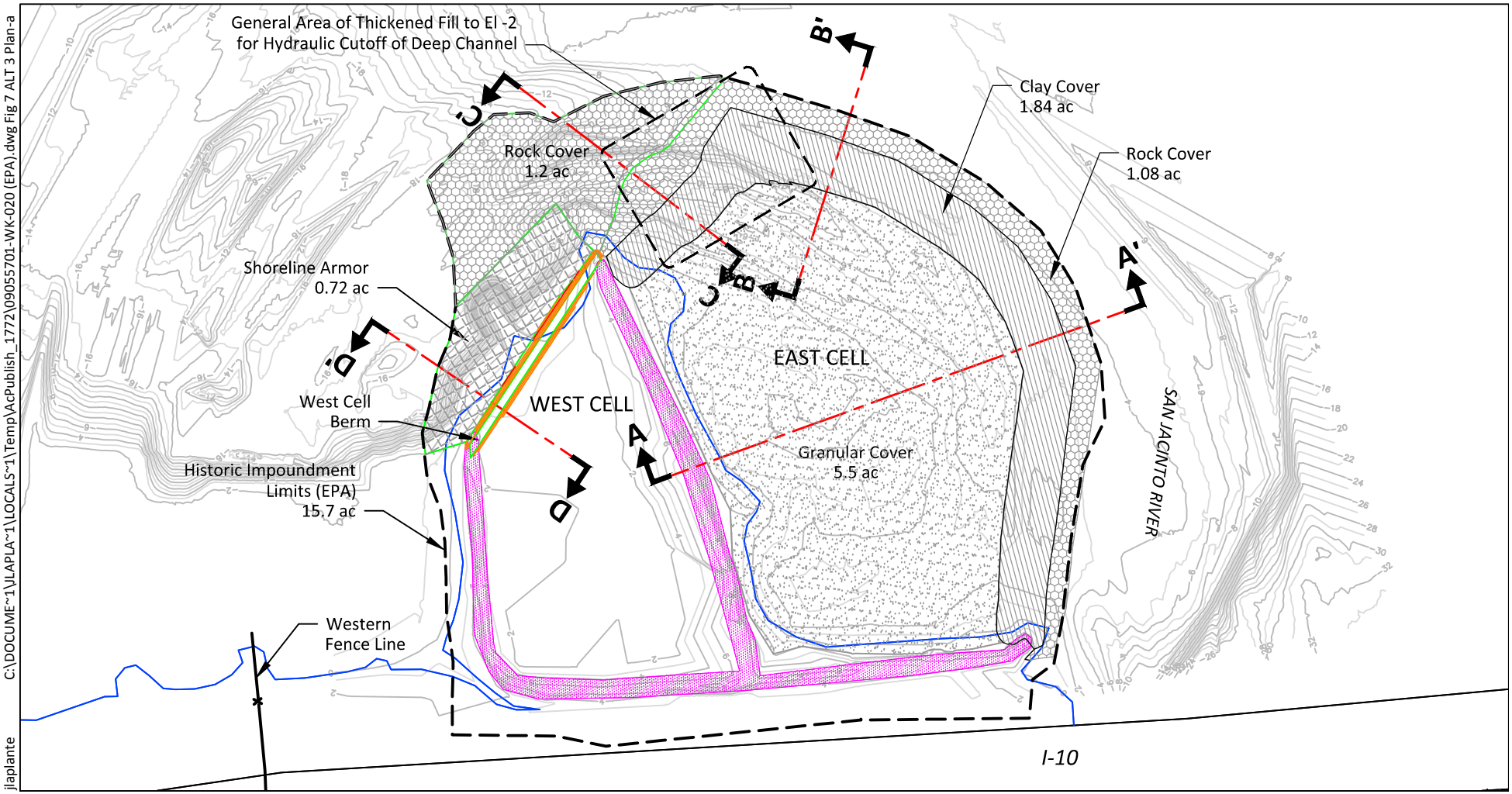
SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 4 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

May 10, 2010 4:34pm jlaplante

Figure 6
Cross Sections C and D - Alternative 2
SJRWP TCRA

ANCHOR QEA



C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 7 ALT 3 Plan-a
May 10, 2010 4:34pm jlaplante

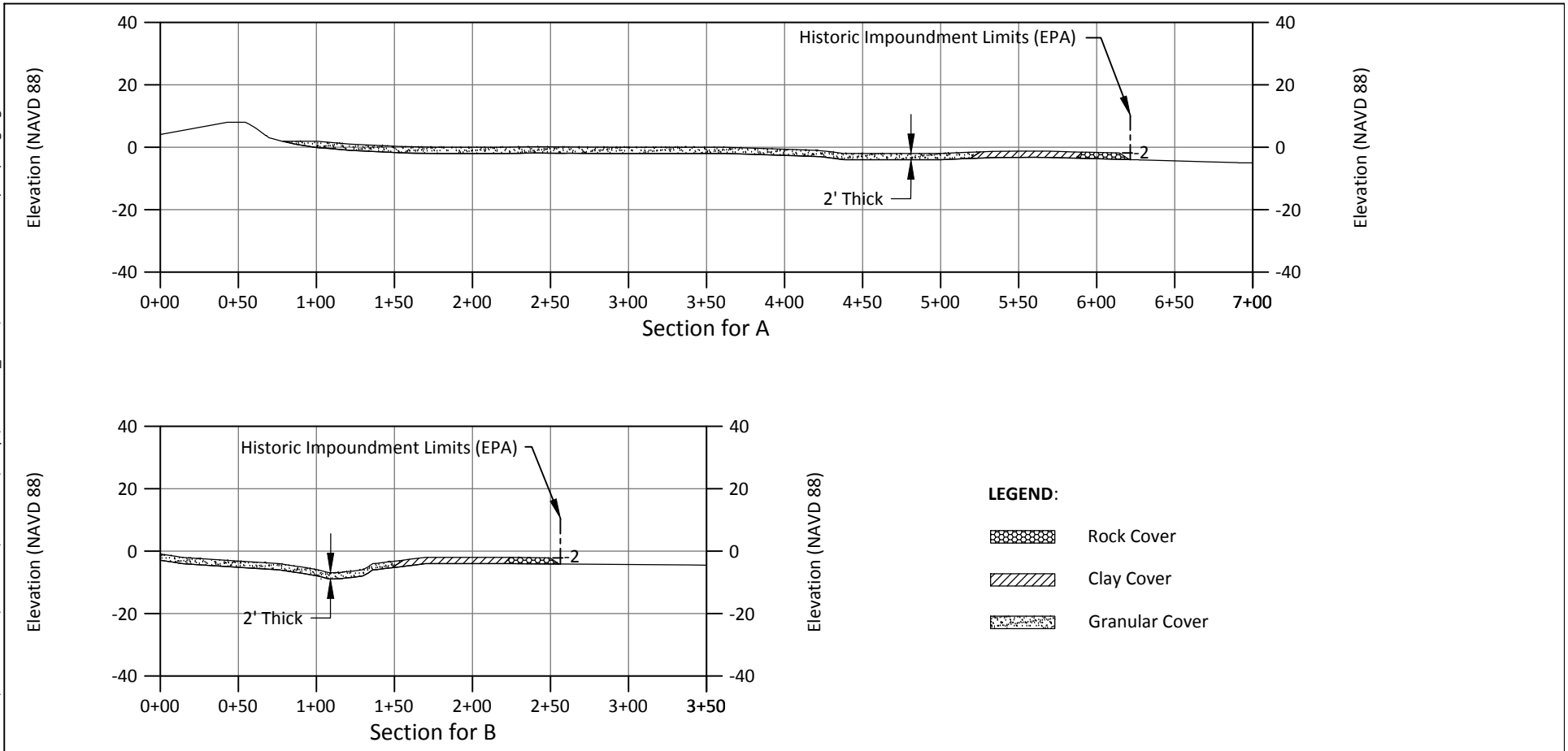
SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figures 8 and 9 for Cross Sections.

A A — Cross Section Locations and Designation

0 200
Scale in Feet

Figure 7
Alternative 3 Plan View
Sediment Cover
SJRWP TCRA

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 8 ALT 3 Sections AB-A



May 10, 2010 4:34pm jlaplante

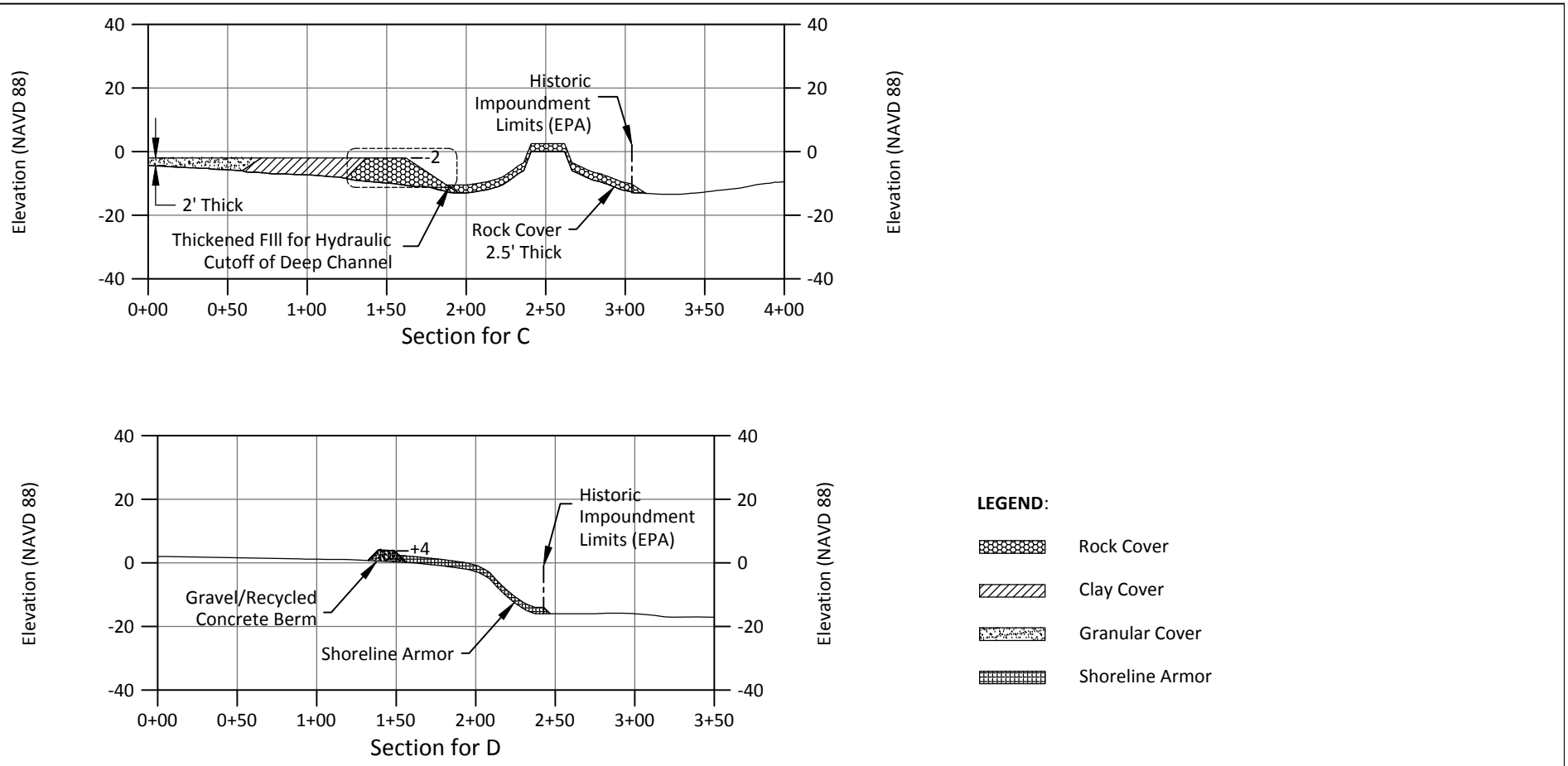
SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 7 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

Figure 8
Cross Sections A and B - Alternative 3
SJRWP TCRA

ANCHOR QEA

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 9 ALT 3 Sections CD-a



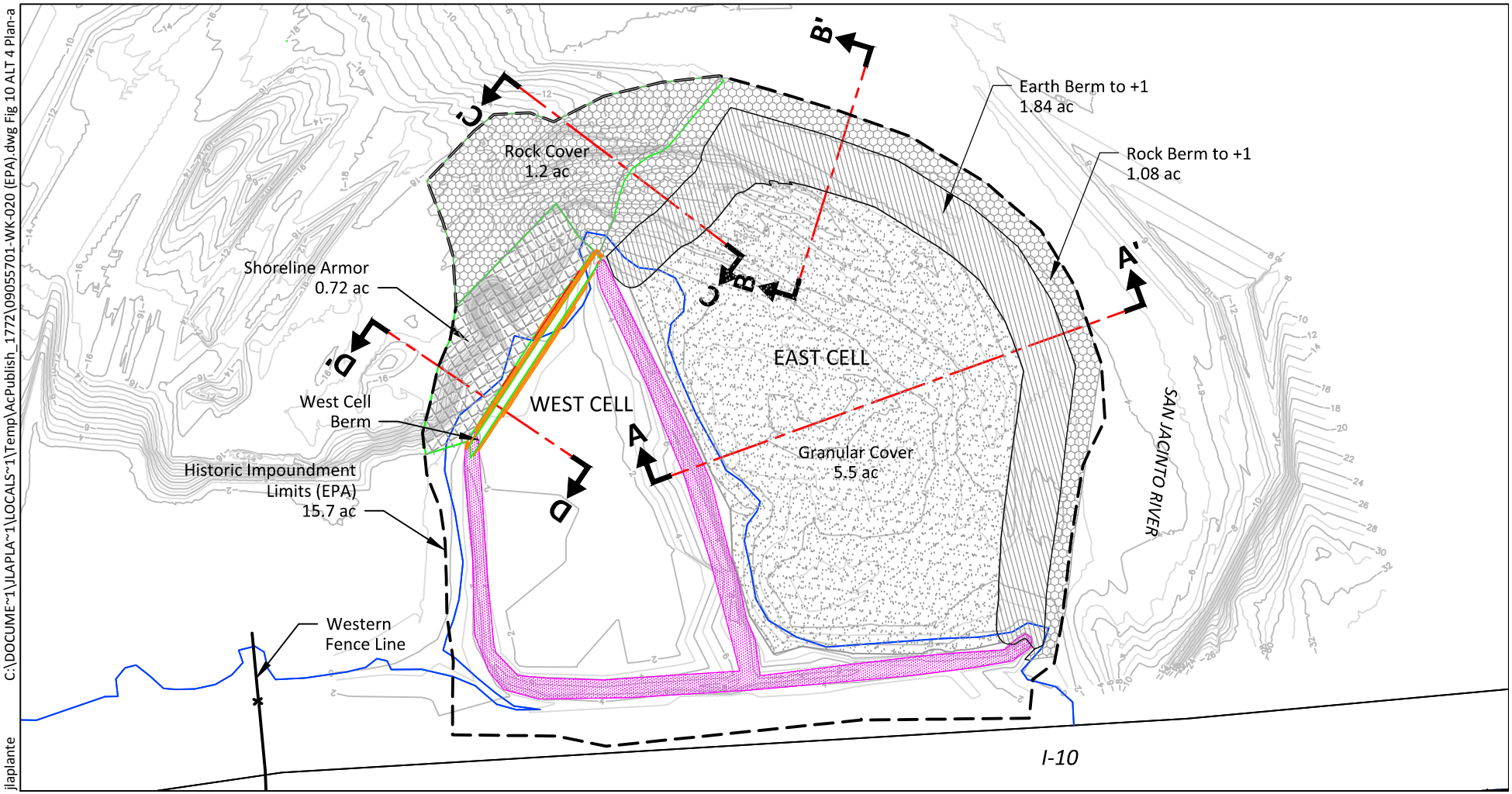
May 10, 2010 4:34pm jlaplante

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 7 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

ANCHOR QEA

Figure 9
Cross Sections C and D - Alternative 3
SJRWP TCRA



SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figures 11 and 12 for Cross Sections.

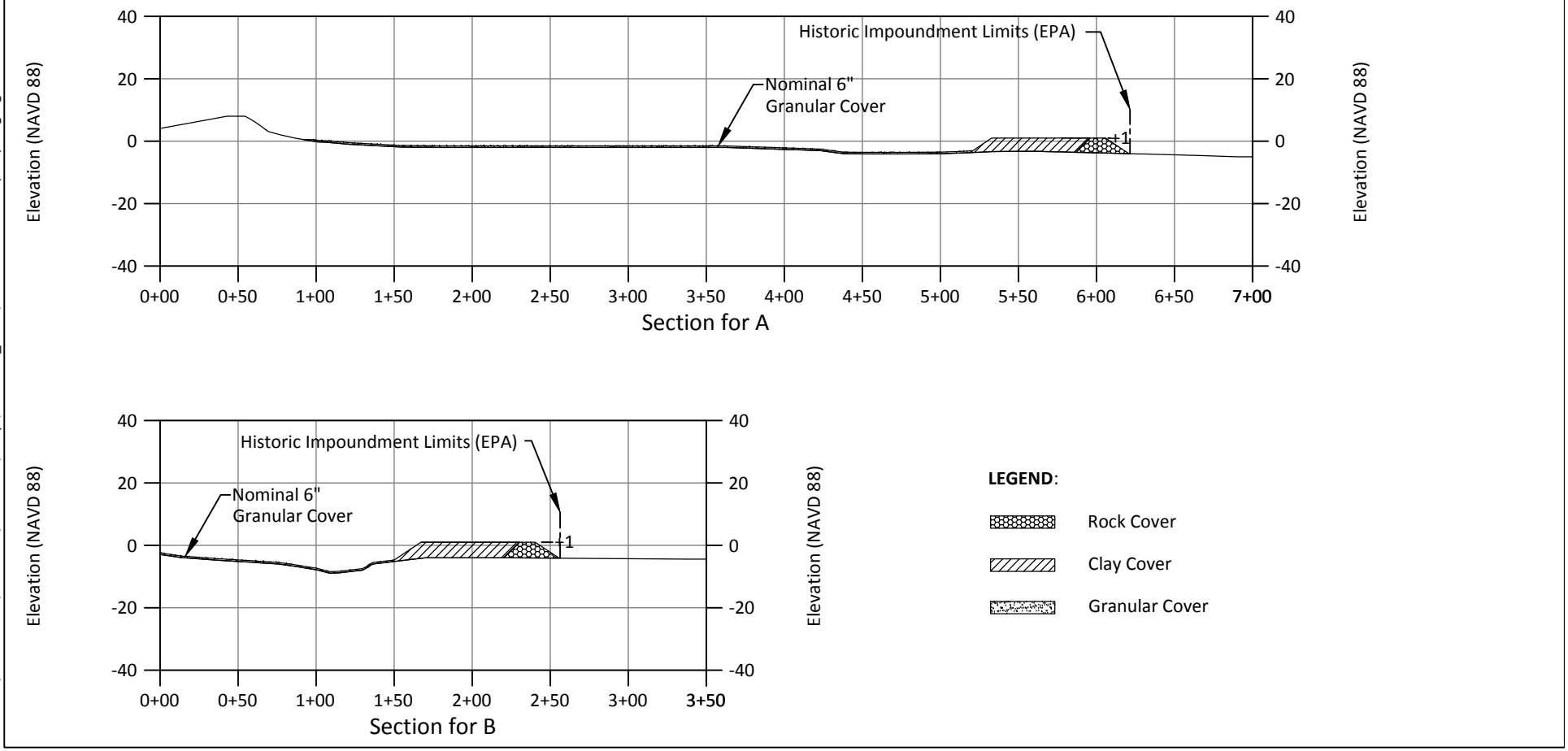
A A Cross Section Locations and Designation

0 200
Scale in Feet

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 10 ALT 4 Plan-a
May 10, 2010 4:34pm jlaplante

Figure 10
Alternative 4 Plan View
East Impoundment Berm and Cover
SJRWP TCRA

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig11 ALT 4 Sections AB-a



SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 10 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

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Figure 11
Cross Sections A and B - Alternative 4
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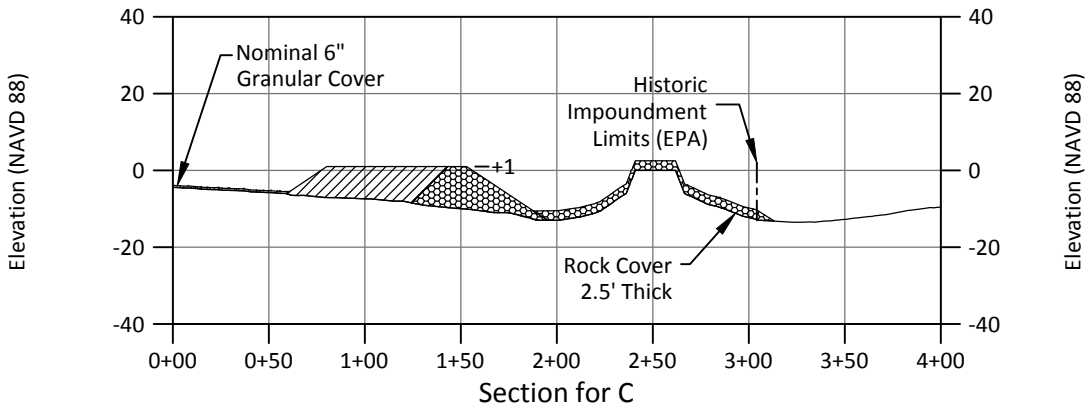
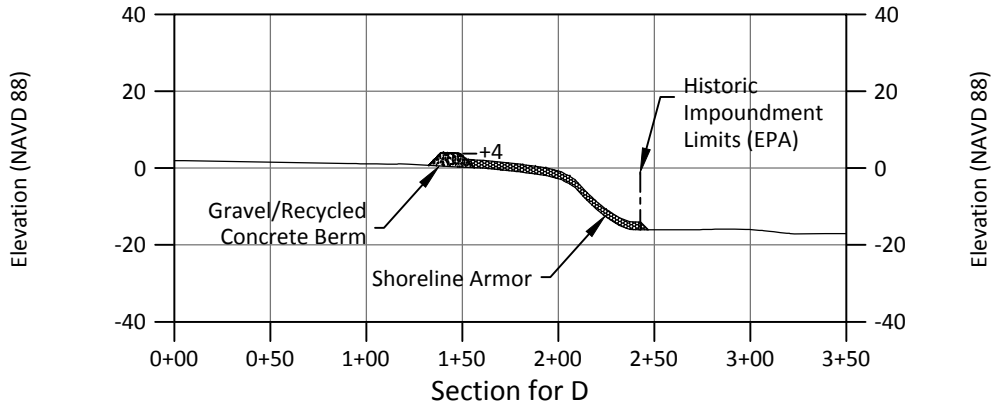
C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 12 ALT 4 Sections CD-a





LEGEND:

- Rock Cover
- Clay Cover
- Granular Cover
- Shoreline Armor

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 10 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

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Figure 12
Cross Sections C and D - Alternative 4
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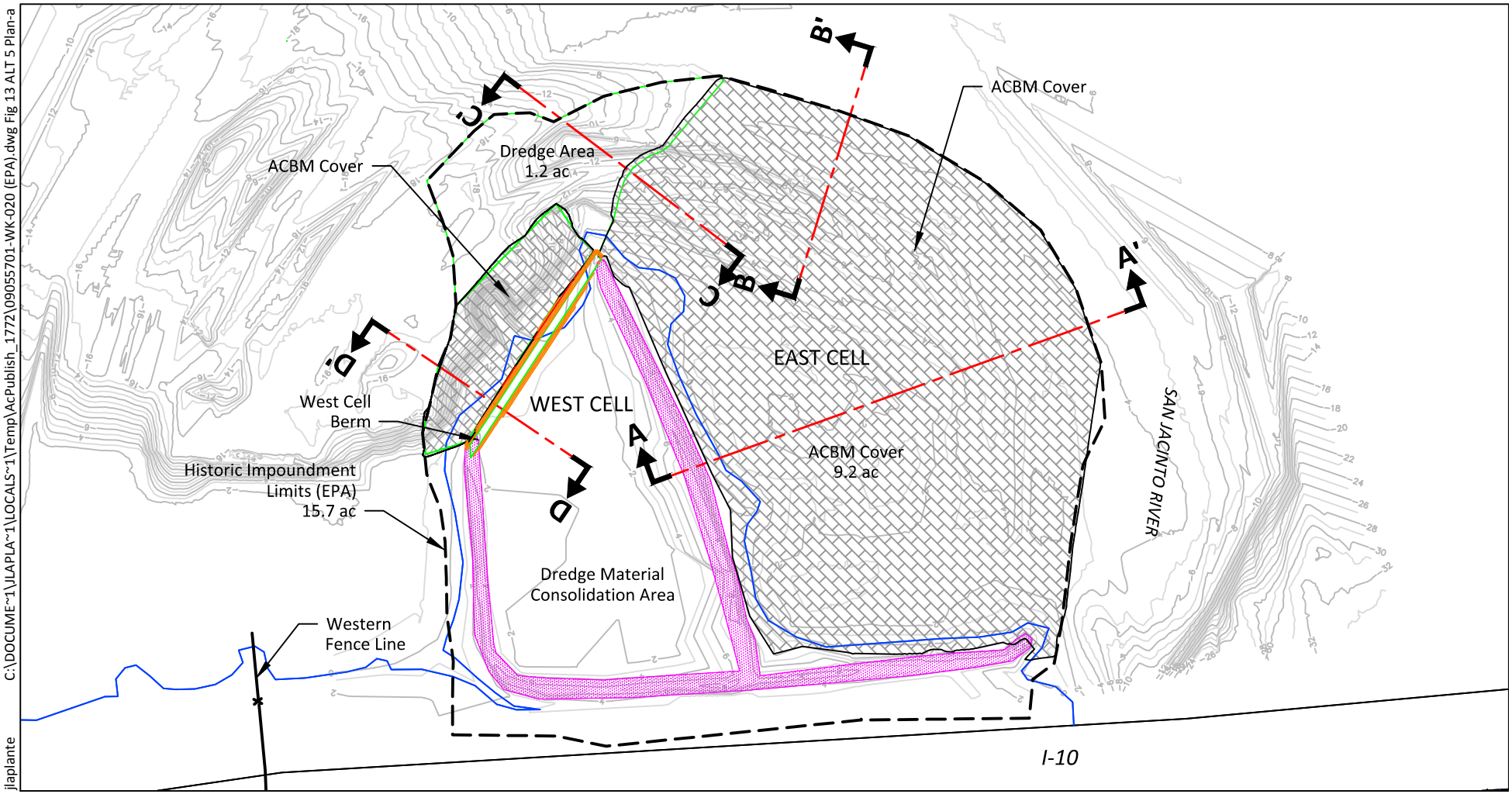


SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figures 14 and 15 for Cross Sections.

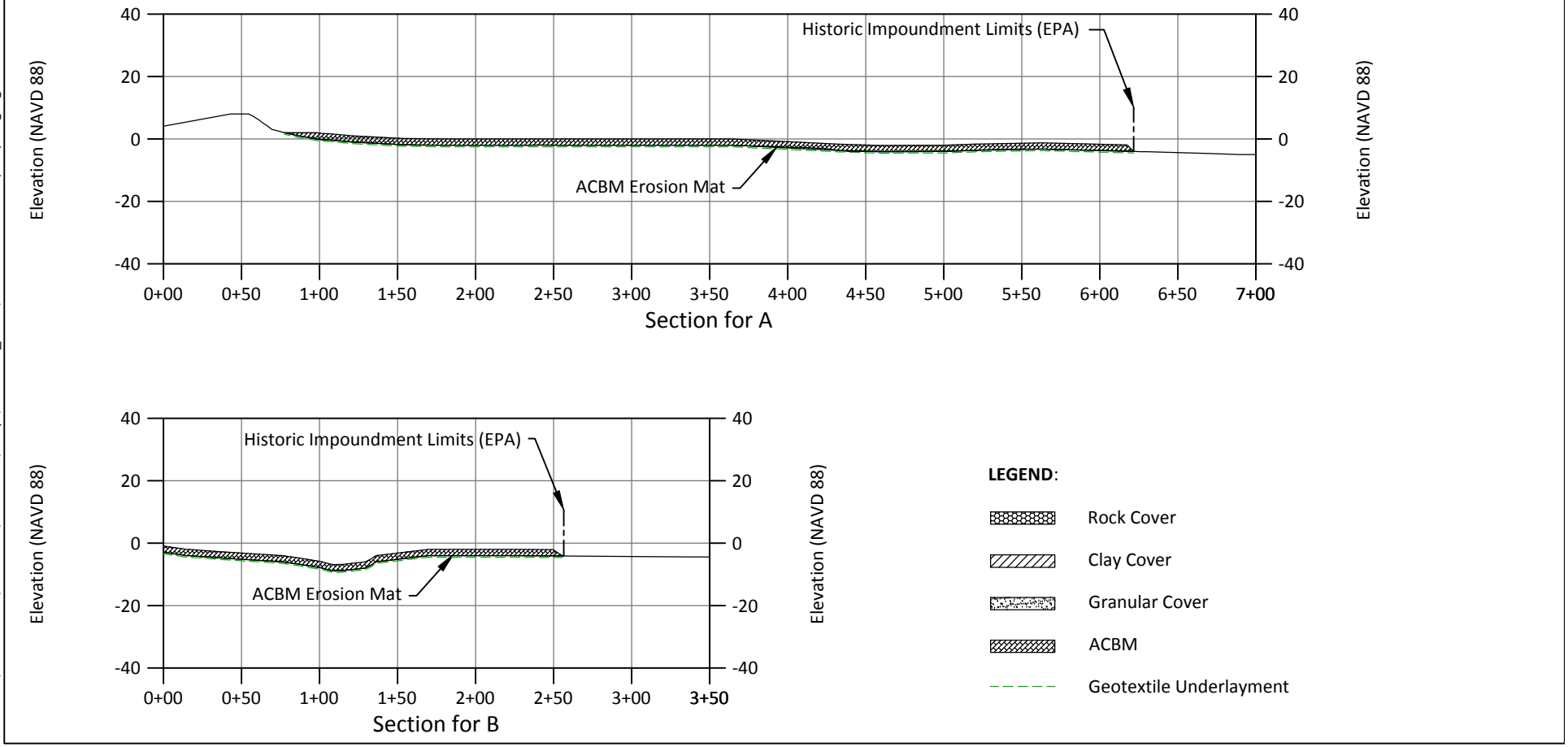
A A Cross Section Locations and Designation

0 200
Scale in Feet

ANCHOR QEA

Figure 13
Alternative 5 Plan View
ACBM Stabilization and Dredge
SJRWP TCRA

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 14 ALT 5 Sections AB-a



May 10, 2010 4:35pm jlaplante

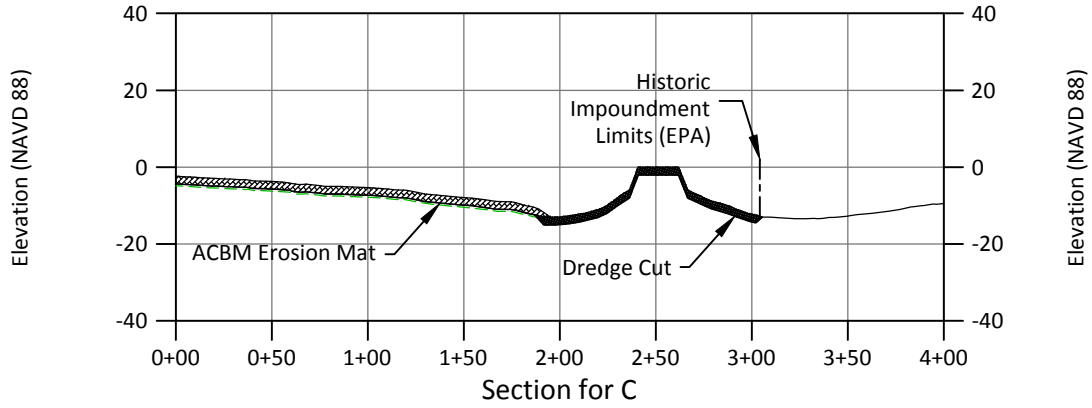
SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 13 for Cross Section Locations.

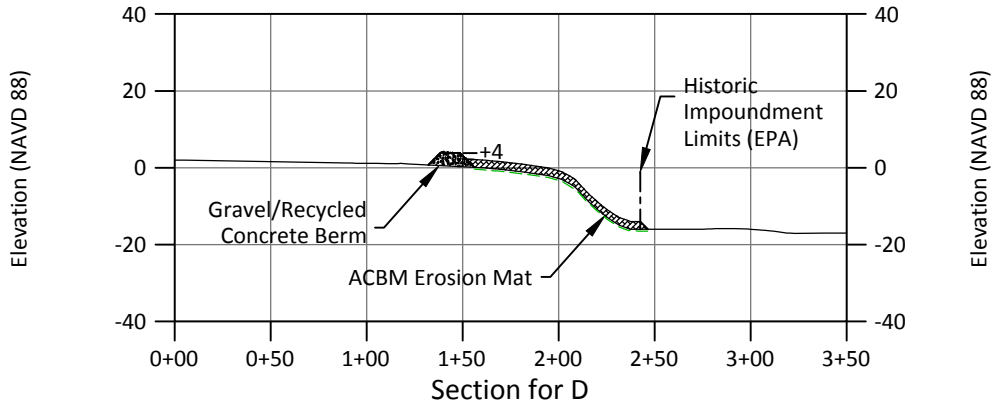
0 100
Scale in Feet
Vertical Exaggeration x2

Figure 14
Cross Sections A and B - Alternative 5
SJRWP TCRA

ANCHOR QEA

C:\DOCUME~1\JLAPLA~1\LOCALS~1\Temp\AcPublish_1772\09055701-WK-020 (EPA).dwg Fig 15 ALT 5 Sections CD-a





LEGEND:

- Rock Cover
- Clay Cover
- Granular Cover
- ACBM
- Geotextile Underlayment

SOURCE: Drawing prepared from COE
HORIZONTAL DATUM: Texas South Central, NAD83. US Survey Feet.
VERTICAL DATUM: NAVD 88.
NOTE: See Figure 13 for Cross Section Locations.

0 100
Scale in Feet
Vertical Exaggeration x2

May 10, 2010 4:35pm jlaplante

Figure 15
Cross Sections C and D - Alternative 5
SJRWP TCRA

ANCHOR QEA